ACCRI

Aviation Climate-Change Research Initiative

Outline

- What is it?
- Background
- How can GMI help?

Malcolm Ko

June 13, 2007

ACCRI

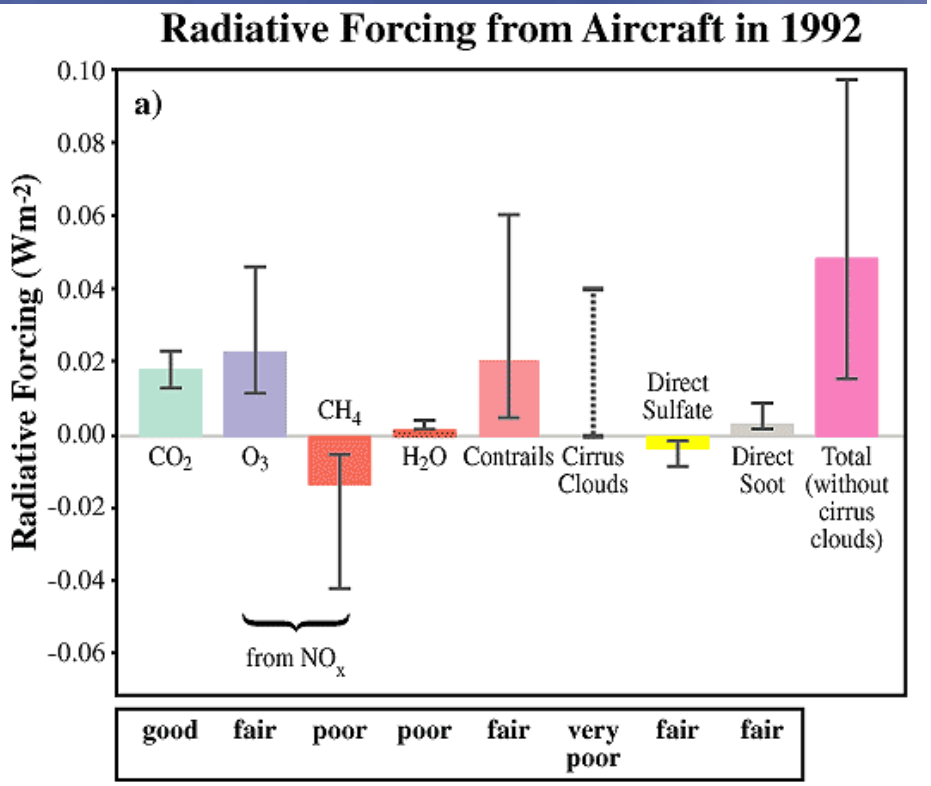
Aviation Climate-Change Research Initiative

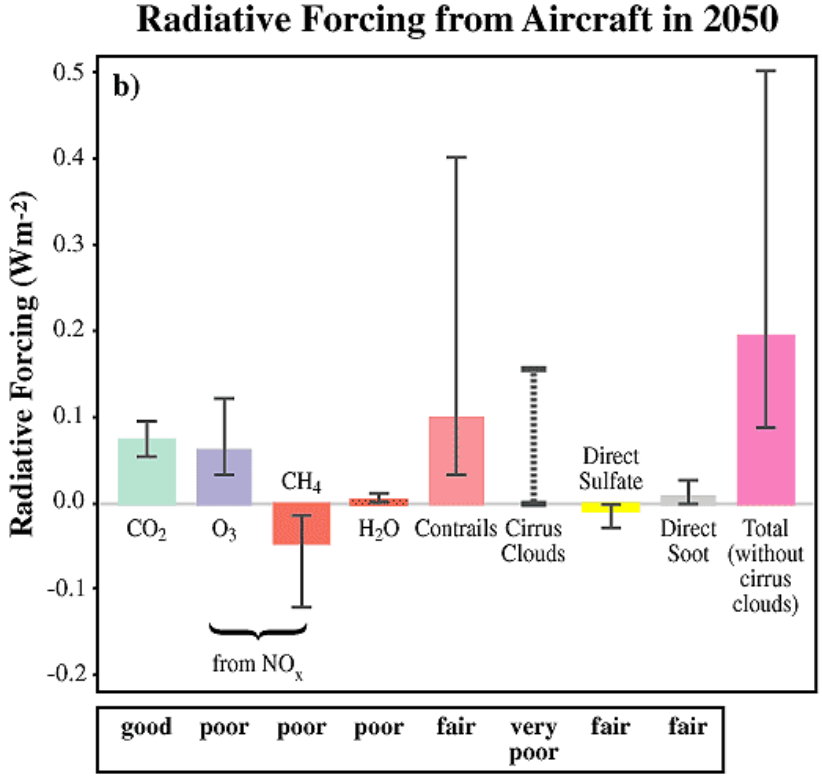
- An attempt to co-ordinate research efforts funded by NASA ESD and FAA
- Steps
  - White papers now - 12/07 (FAA)
  - Workshop 2/08, report 4/08 (FAA)
  - ROSES NRA call for FY08 (NASA)
  - Assessment calculations 6/08 - 6/09 (FAA)
  - Long-term research activities funded by FAA and NASA beyond 2009
- Why the sudden urgency?

Previous NASA Activities

- AEAP (~ 1990)/subsonic (~1997)
  - NASA Aeronautics funding, science team managed by Earth Science
    - Michael Prather, Rich Stolarski, Randy Friedl, Don Anderson, Randy Kawa
- Assessment Reports
  - Several NASA reports 1991 - 1998
  - IPCC 1999

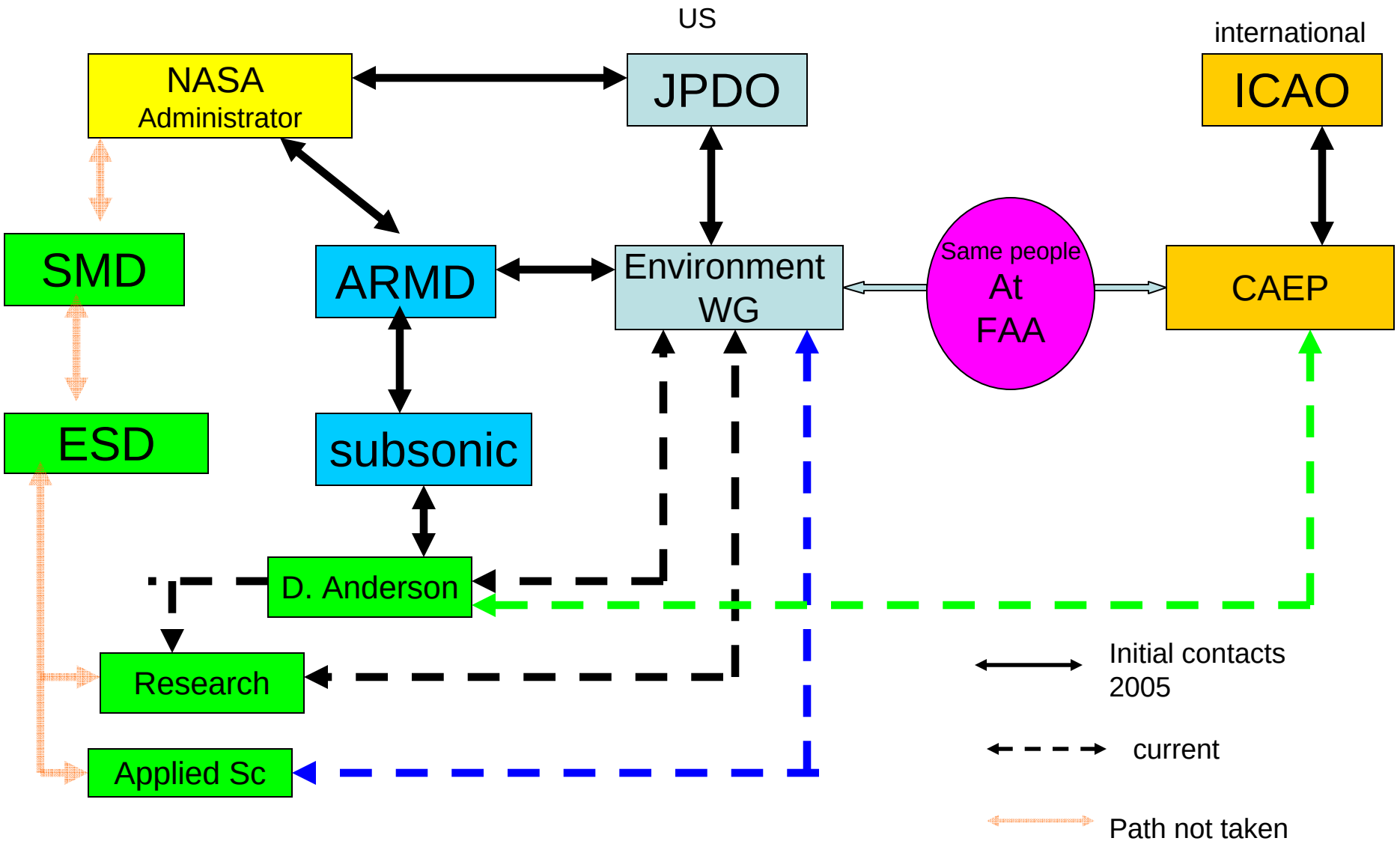
- Instantaneous forcing from cumulative emissions
- Different picture if one looks at instantaneous forcing from one year operation
- Different picture if one looks at integrated forcing
- Cannot be used directly for trade studies
- Uncertainty estimates have not changed significantly





- IPCC, 1999

The players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Initial contacts
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current
Path not taken

ICAO

International Civil Aviation Organization

http://www.icao.int/icao/en/env/caep.htm

- CAEP, Committee on Aviation Environmental Protection
  - Carl Burleson (FAA) heads the US delegation
- Previous focus on noise and air quality
- Global climate is a new thing
- Concerned with certification process
- Work on 3 year cycle, next big meeting in 2/2010

JPDO

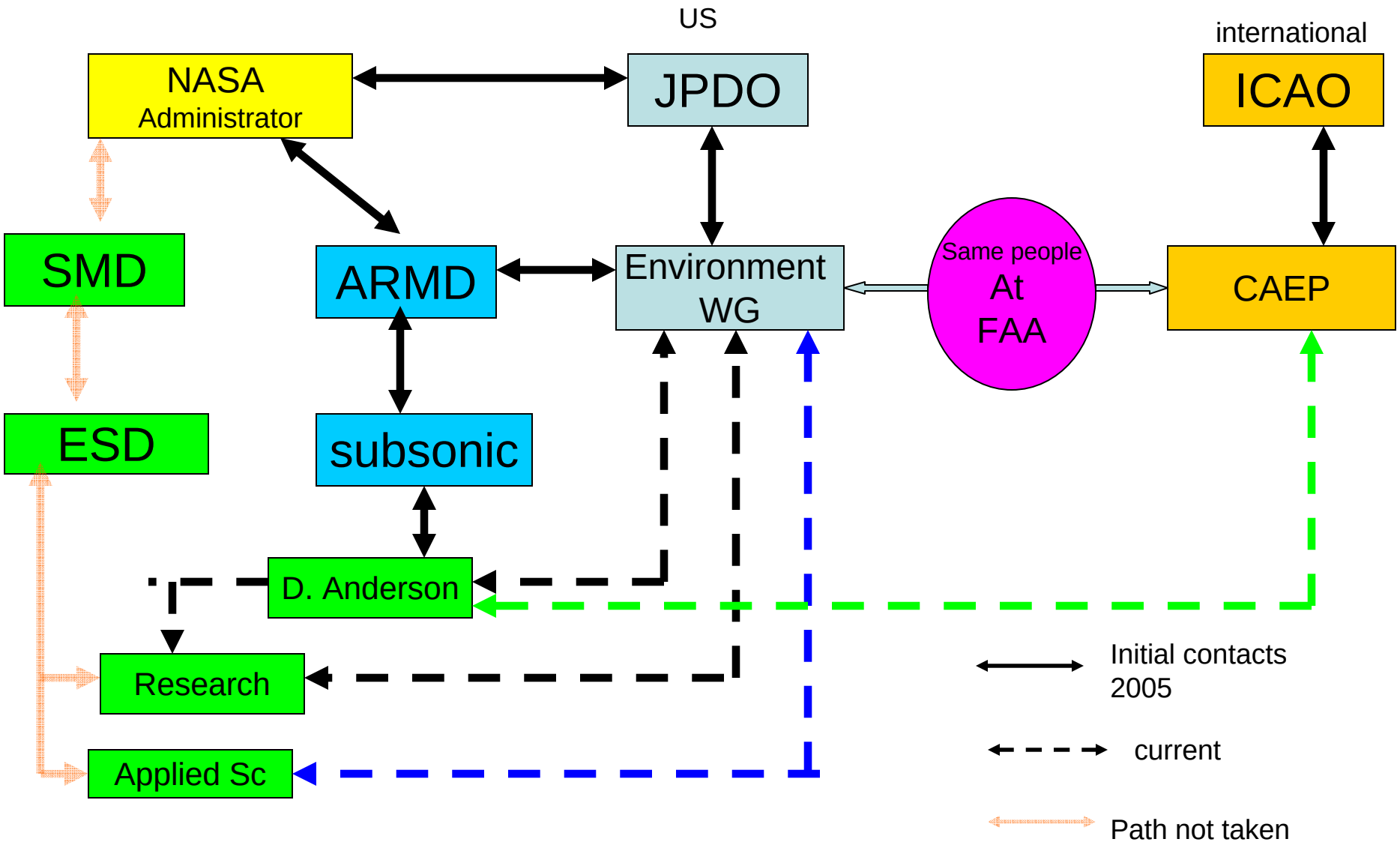
http://www.jpdo.gov/index.asp

- US multi-agency body
  - FAA, NASA, DOT,DOD, DHS, DOC, OSTP
  - No line authority, work with participating agencies to create and co-ordinate NextGen activities
- NextGen activities: enable aviation transportation system to meet demands
  - Keep fliers happy, less delay
  - Able to build/expand airports
  - Able to land in international airports
  - Climate issue
- Working Groups
  - Aircraft, airport, air navigation services, environment, global harmonization, net centric operation, safety, security, weather

Common Interests between CAEP and Environmental WG activities

- How to design fleet and operation to minimize environmental impacts?
  - Noise, local air quality, climate
  - Metric for trade studies
- CAEP: more concerned with Standards and Certification
- EWG: enable US aviation transportation system to meet demands
  - Keep fliers happy, less delay
  - Able to build/expand airports
  - Able to land in international airports
- Life cycle for fleet: 20 years from design to production; 40 years service; need science input now for 2025 design for operation through 2065

The players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Our Role

- They need our help
- Put ourselves in their shoes and provide answers to specific questions
- Be vigilant how the answers may be used to justify specific metric
  - Quantify uncertainties at every step
  - If it does not make sense, say so
- White Papers:
  - Contrail (UT/LS water vapor)
  - Metric: inhomogeneous forcing, ozone, contrail vs WMGHG like CO_2
  - Capture effects of operation changes (model grid, plume processing, etc.)